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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/081,834	02/22/2002	Laxmi P. Parida	YOR920010446US2	3116
48062 7590 01/23/2007 RYAN, MASON & LEWIS, LLP 1300 POST ROAD SUITE 205 FAIRFIELD, CT 06824			EXAMINER AGRAWAL, RITESH	
			ART UNIT	PAPER NUMBER
			1631	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		01/23/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

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APPLICATION NO./ CONTROL NO.	FILING DATE	FIRST NAMED INVENTOR / PATENT IN REEXAMINATION	ATTORNEY DOCKET NO.
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EXAMINER

ART UNIT	PAPER
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20070111

DATE MAILED:

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner for Patents**Requirement for Information Under 37 CFR 1.105**

Applicant and the assignee of this application are required under 37 CFR 1.105 to provide the following information that the examiner has determined is reasonably necessary to the examination of this application.

The information is required to enter in the record the art suggested by the applicant as relevant to this examination. On lines 14-17 of page 14 of the specification, applicant lists a reference to Parida paper published in 2000 which appears to be relevant to at least claim 14 of the instant application.

In response to this requirement, please provide a copy of the reference described above.

The fee and certification requirements of 37 CFR 1.97 are waived for those documents submitted in reply to this requirement. This waiver extends only to those documents within the scope of this requirement under 37 CFR 1.105 that are included in the applicant's first complete communication responding to this requirement. Any supplemental replies subsequent to the first communication responding to this requirement and any information disclosures beyond the scope of this requirement under 37 CFR 1.105 are subject to the fee and certification requirements of 37 CFR 1.97.

The applicant is reminded that the reply to this requirement must be made with candor and good faith under 37 CFR 1.56. Where the applicant does not have or cannot readily obtain an item of required information, a statement that the item is unknown or cannot be readily obtained may be accepted as a complete reply to the requirement for that item.

This requirement is an attachment of the enclosed Office action. A complete reply to the enclosed Office action must include a complete reply to this requirement. The time period for reply to this requirement coincides with the time period for reply to the enclosed Office action.

RA

Office Action Summary

Application No.

10/081,834

Applicant(s)

PARIDA, LAXMI P.

Examiner

Ritesh Agrawal

Art Unit

1631

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 December 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) 18-25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 and 26 is/are rejected.
- 7) ☒ Claim(s) 4 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of invention I (claims 1-15) in the reply filed on 12/22/06 is acknowledged. The traversal with respect to the various methods, is on the ground(s) that the inventions can be commonly searched because "each Group is generally drawn to pattern discovery techniques for determining maximally redundant and irredundant motifs," (remarks, pages 1-2). This is not found persuasive because each of the methods utilizes different input, carries out different method steps, and produces different results as argued in the original restriction requirement. Given these differences in input, manipulation steps, and output, the methods will require a separate search. The traversal, with respect to the separation of methods from corresponding computers is on the grounds that, "The Novelty of the Computer is determined by evaluating the novelty of the implemented method," (remarks, page 2). With respect to the restriction of the methods from the computers, applicant argument is found persuasive.

Thus, the restriction between Group I, and II are hereby withdrawn. Claim 26 (restriction group V) links groups I and III, and is therefore under consideration with group I.

The requirement with regard to restriction of the other groups is still deemed proper and is therefore made FINAL.

Claims 18-25 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or

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linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 12/22/06.

Claims 1-26 are pending. Claims 1-17 and 26 are presently under consideration.

Specification

2. The disclosure is objected to because of the following informalities:

Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following:

- (1) if a machine or apparatus, its organization and operation;
- (2) if an article, its method of making;
- (3) if a chemical compound, its identity and use;
- (4) if a mixture, its ingredients;
- (5) if a process, the steps.

Extensive mechanical and design details of apparatus should not be given.

The abstract of the disclosure is objected to because it exceeds 150 words. In addition, whereas the invention includes both a process and apparatus, the abstract is solely drawn to a process. Correction is required. See MPEP § 608.01(b).

Appropriate correction is required.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-17 and 26 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

The following analysis of facts of this particular patent application follows the analysis suggested in the "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility"¹. Note that the text of the Guidelines is italicized.

To satisfy section 101 requirements, the claim must be for a practical application of the § 101 judicial exception, which can be identified in various ways (Guidelines, p. 19):

¹ Available at http://www.uspto.gov/web/offices/pac/dapp/opla/preognotice/guidelines101_20051026.pdf

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- The claimed invention "transforms" an article or physical object to a different state or thing.
- The claimed invention otherwise produces a useful, concrete and tangible result, based on the factors discussed below.

In the instant case, the claimed invention does not "transform" an article or physical object to a different state or thing because it merely identifies patterns in sequences. This does not preclude the subject matter to be patentable as, for eligibility analysis, as

physical transformation "is not an invariable requirement, but merely one example of how a mathematical algorithm [or law of nature] may bring about a useful application." AT&T, 172 F.3d at 1358-59, 50 USPQ2d at 1452. If the examiner determines that the claim does not entail the transformation of an article, then the examiner shall review the claim to determine if the claim provides a practical application that produces a useful, tangible and concrete result. In determining whether the claim is for a "practical application," the focus is not on whether the steps taken to achieve a particular result are useful, tangible and concrete, but rather that the final result achieved by the claimed invention is "useful, tangible and concrete." The claim must be examined to see if it includes anything more than a § 101 judicial exception. If the claim is directed to a practical application of the § 101 judicial exception producing a result tied to the physical world that does not preempt the judicial exception, then the claim meets the statutory requirement of 35 U.S.C. § 101. If the examiner does not find such a practical application, the examiner has determined that the claim is nonstatutory. (Guidelines, p. 20)

The question is thus whether the final result achieved by the claimed invention satisfies all three criteria of being useful, and concrete, and tangible.

Furthermore, the useful, tangible, and concrete result must be recited in the claim itself, rather than addressed in specification.

(2) **"TANGIBLE RESULT"** The tangible requirement does not necessarily mean that a claim must either be tied to a particular machine or apparatus or must operate to change articles or materials to a different state or thing. However, the tangible

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requirement does require that the claim must recite more than a § 101 judicial exception, in that the process claim must set forth a practical application of that § 101 judicial exception to produce a real-world result. The opposite meaning of "tangible" is "abstract."

The instant claims are drawn to computational means for pattern discovery.

However, as claimed, at least one embodiment of the method does not produce a tangible result. For example, the method as claimed may take place entirely within the confines of a computer or a human mind without any communication to the outside world and without using or making available for use, the results of the computation. Thus, the instant methods of the claims do not produce any tangible result.

Therefore, the final result achieved by the claimed invention does not satisfy all three criteria of being useful, and concrete, and tangible.

Furthermore, in regard to claims 16 and 17, the "Computer-Related Inventions" section of the MPEP at section 2106, Part IV, subpart B, also clarifies that claiming non-statutory subject matter on a computer medium or a system does not prevent this rejection.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-17 and 26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The preamble for claim 1 recites a method for pattern discovery. However, the result of the method is the removal of motifs. It is unclear as to how the claim achieves the goal set out in the preamble.

Claim 1 recites the limitation "removing selected motifs" in line 7. There is insufficient antecedent basis for this limitation in the claim. There is no prior reference to "selecting motifs."

Claim 2 recites the phrase "selecting motifs of the concatenated motifs and the first motif for removal" in lines 1-2. Claim 1, from which it depends, recites multiple first motifs. It is therefore unclear as to which of these motifs the phrase refers.

Claim 8 recites the limitation "performing the steps of concatenating and removing until no new motifs are generated " in lines 2-3. There is insufficient antecedent basis for this limitation in the claim. There is no reference to the generation of motifs in claim 1. It is therefore unclear as to how this could serve as a stopping condition.

Claim 9 recites the phrase "each motif has been concatenated with another motif" in line 14. Since the claim recites multiple motifs (first motifs, solid element motifs, and second motifs) it is unclear as to which (or all) of these motifs the phrase refers.

Claim 9 recites the phrase "the method further comprises the steps of" in line 15. It is unclear as to which method this refers. Does it refer to just the method outlined in claim 1, or the entire method outlined previous to this phrase in claim 9.

Claim 9 recites the limitation "performing the steps of concatenating and removing until no new motifs are generated " in lines 17-18. There is insufficient

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antecedent basis for this limitation in the claim. There is no reference to the generation of motifs in claim 1. It is therefore unclear as to how this could serve as a stopping condition.

Claim 15 recites the limitation "the method of claim 8, wherein remaining motifs" in line 1. There is insufficient antecedent basis for this limitation in the claim. There is no reference to "remaining motifs" in claim 8 or claim 1, from which it depends.

Claim 16 recites the limitation "the input sequence" in line 5. There is insufficient antecedent basis for this limitation in the claim. There is no prior reference to an input sequence in the claim.

Claim 17 recites the limitation "the input sequence" in line 4. There is insufficient antecedent basis for this limitation in the claim. There is no prior reference to an input sequence in the claim.

The preamble for claim 26 recites a method for pattern discovery. However, the result of the method is the determination of a plurality of maximal redundant motifs. It is unclear as to how the claim achieves the goal set out in the preamble.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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5. Claims 1-2, 5, and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Myers et al. (Science, Vol. 287, Pages 2196-2204, March 24th, 2000).

The claims are drawn to a method for pattern discovery comprising the steps of:

(a) determining a plurality of first motifs

(b) concatenating the plurality of first motifs with other first motifs to produce concatenated motifs

(c) removing selected concatenated and first motifs

Myers et al. disclose obtaining sequence from an input sequence, the *Drosophila* genome sequence (abstract). From the genome sequence, the authors obtain sequences of bases (first motifs), which are concatenated into a read (concatenated motif) (page 2197, 3rd column, 2nd paragraph, lines 6-7). Myers et al. further disclose removing (trimming) bases that match vector or linker sequence and removing entire reads when significant matches to *E. coli* or cloning or sequencing vectors are found (page 2197, 2nd paragraph, lines 9-19).

With respect to claim 2, Myers et al. are removing first motifs based on the criteria of matching sequencing vector or linker sequence, and removing concatenated motifs based upon the criteria of significant matching to *E. coli* sequence, or cloning or sequencing vector sequence.

With respect to claim 5, Myers et al. disclose removing redundant sequences (page 2198, 1st column, 1st paragraph).

With respect to claim 12, the *Drosophila* genome sequence used as input by Myers et al. comprises characters from the alphabet of DNA nucleotides.

With respect to claims 16-17, the represent a computer-based implementations of the method of claim 1. Given Myers et al. description of computer systems and software (see page 2203, for example, 2nd column, notes 13-17) it would be clear to one of ordinary skill in the art that Myers et al. had their method in a computer and on a computer-readable medium.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. Claims 1-2, 5-6, 12-14, and 16-17 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 3-5, and 20-21 of U.S. Patent No. 6,571,230. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of the prior patent anticipate

the claims of the instant application. For example, whereas claim 1 of the instant application refers to the more general method of carrying out the steps of (a) determining a plurality of motifs, (b) concatenating motifs, and (c) removing selected motifs, claim 1 of the prior patent is specifically drawn to determining, concatenating and removing patterns (where a pattern is interpreted to be a motif) where motifs are removed using information about associated location lists. In addition, the prior patent adds a step of storing the motifs and association lists. While claim 1 of the prior patent doesn't specifically disclose that it removes redundant motifs, it appears to carry out the same steps as claim 6 of the instant application that provides a method for removing the redundant motifs of claim 5 of the instant application. Claims 12-14 of the instant application appear to add the same limitations to claim 1 of the instant application that claims 3-5 of the prior patent add to claim 1 of the prior patent. Claims 16-17 of the instant application appear to add the same limitations to claim 1 of the instant application as claims 20-21 of the prior patent add to claim 1 of the prior patent.

Claim Objections

7. Claim 4 is objected to because of the following informalities: Claim 4 recites the phrase "augmenting a motifs" in line 8. It appears that this should either read "a motif" or just "motifs." Appropriate correction is required.

Conclusion

8. No claim is allowed.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ritesh Agrawal whose telephone number is (571) 272-2906. The examiner can normally be reached on 8:30 AM - 5:00 PM M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Wang can be reached on 571-272-0811. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Ritesh Agrawal, PhD

RA


SHUBO (JOE) ZHOU, PH.D.
PATENT EXAMINER

1/17/07